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ABSTRACT

Research on career development has shown sex differences in patterns of occupational choices and labor force participation. Test takers of career interest inventories and occupational tests may perceive adult roles differently if they are male or female; thus, these perceptions are critical to any attempt to reduce sex bias in testing. High school students (N=600) rated the importance of several values on their choice of an occupation, the decision to marry, and the decision to become a parent. Both males and females agreed on the importance of high income, job security and leisure opportunities as components of an ideal job. For females, the addition of a prestige value suggested a belief in the prestige of working. For males, prestige was related to leadership and working in a field of interest. Results showed that high school students perceived the adult world differently. Career choices by women tended to be limited by past experience or expectation; career choices made by men did not consider values related to other adult roles in marriage and parenthood. The findings suggest that these differences may affect the construct validity of tests and therefore should be taken into consideration by counselors. (JAC)

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SEX DIFFERENCES IN OCCUPATIONAL VALUES: IMPLICATIONS FOR REDUCING SEX BIAS

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Sex differences in occupational values: Implications for reducing sex bias[1]

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The perspective on reducing sex bias in tests to be discussed fits within the expanded view of test validity given by Messick (1980). Messick has presented what he calls four facets of validity and calls attention to construct validity as the basis for test interpretation and construct validity plus relevance and utility as the basis for test use. In addition to the evidential basis of test validity, a consequential basis is considered for both test interpretation and test use. This view of validity is helpful in considering the dilemmas of trying to reduce sex bias in measurement. It calls attention to the logical consequences as well as the evidence typically considered to constitute an understanding of test validity. The values underlying different approaches are also more readily examined if the consequences of each is considered.

In guidance and counseling there is a unique aspect to test use. In contrast to other uses of educational and psychological tests where instructional and administrative decisions are dominant, and someone other than the test taker is the decision maker, guidance uses of tests focus on the test taker as decision maker. Thus in reducing sex bias in test use in guidance, we need to examine, as suggested by Messick's views of validity, the test taker's

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[1]Paper presented at the annual meeting of the American Psychological Association, Los Angeles, August 1981.

perception of the instruments and accompanying interpretive information. This view has a number of implications for research on tests used in vocational guidance. Among the implications is the need to review the general research literature on the career development patterns of men and women, the adult roles that are emphasized for them, and, more generally, the female world as Jessie Bernard (1981) has recently summarized it. We also need to consider the developing literature on the purposes of individuals in taking occupational inventories and studies of effects.

The research literature on career development shows sex differences in patterns of occupational choices and labor force participation. Career theorists were late in acknowledging these differences and still have not integrated the differing emphases given to adult roles of worker, marriage partner, and parent into the set of variables to be considered by both females and males in their life plans. The research reported here suggests that test takers may perceive or structure aspects of these several adult roles differently if they are female and male and these perceptions are critical to any attempt to reduce sex bias in testing (following the NIE definitions of sex bias, Diamond, 1975). By implication, the research also suggests that studies of the meaning of test scores and effects of being tested--whether "interest inventoried" or "ability tested"--are important in their own right if tests are to have a role in assisting individuals to make career plans less dependent on their status as female or male.

The next sections present:

1. a description of the sample for the study of occupational, marriage, and parenthood values;

2. the results of the exploratory factor analysis of occupational values; and
3. the results of exploratory factor analyses of the three value sets.

The final section describes the implications for reducing sex bias.

1. The study and sample

The present study uses the ten occupational values developed by Martin Katz (1966, 1973), and eleven marriage and twelve parenthood values developed for the study. The values within each set were presented on 3 x 5 cards to students as part of an individual interview. Students were asked to rank order and then rate on a scale from 0-8 the importance of each value in making the choice of an occupation, the decision to marry, or the decision to become a parent. The sample of 600 urban eleventh grade students represented equally females and males, middle and low socioeconomic levels, and three ethnic groups, white, black, and Hispanic. Multivariate analyses of variance were carried out on the 2 x 2 x 3 design for the ratings of each value set. Within each value set, significant main effects were shown for each factor with no interactions. Table 1 presents the listing of all the values and the mean scores for females and males (standardized within individuals to a mean of 50 and SD of 10). A complete description of the sample and procedures are given in Tittle (1981).

In looking at the differences it is well to keep in mind that there is clearly an extensive overlap in the distributions for females and males. The sample size is large, accounting for some statistically significant differences with little practical difference. However, most of these differences are in expected directions, particularly the average ratings for the occupational

value of Helping Others. It is also of interest to know that with only rare exception, all the values in each set received every possible rank from students (no students gave the lowest rank of 12 to the parenthood value of A Chance to Express Love). This is in accord with the efforts in developing the values--to have value statements that are attractive to all students, i.e., yield fairly rectangular distributions of ranks.

2. Exploratory factor analyses of the occupational values

The occupational ratings (0-8) for females and males were analyzed separately. Principal factor analysis with varimax rotation yielded four factors with eigen values greater than one. The results of these analyses are given in Table 2, which shows the occupational values with factor loadings of .30 or greater for each factor. Factor 1 is similar for both females and males, and might be called a general factor that is an ideal of what a job should be--that is, a job includes High Income, provides Security, and gives opportunities to have Leisure time. For females, the addition of the Prestige value may indicate that (speculating to a great degree) there is prestige in working, it is important to have a job and that one is seen by others as important. Another speculation is that High Income = Prestige for some females, and that for males (looking at factor 2) there is a distinction between job and Prestige, and leadership must be demonstrated in order to obtain Prestige. Prestige also loads on a factor (4) for males with the value Work in Field of Interest, also suggesting that they may perceive success in a field of specialization as another way to obtain Prestige, or, alternatively, some Fields of Interest are perceived as having Prestige. For females, Leadership loads on a factor by itself.

. The occupational value of Helping Others is associated with different values for females and males. For females it is associated with the values of Security and Work in Field of Interest. Helping Others may be perceived as linked to the importance of a job in providing security and also as being a field of interest (although not specifically identified as one of the six fields of interest students checked: Science, Art, Verbal, Mechanics, Personal contact, Administration). It should be noted here, however, that although the card for Work in Your Main Field of Interest was carefully interpreted to students by using the six fields of interest, some students had difficulty with the concept and interpreted it as meaning it was important to have interesting work. For males, on the other hand, Helping Others is part of a bipolar factor, with High Income as a negative value, and Variety and Independence as accompanying positive weights. Variety and Independence occur on a different factor (2) for females, accompanied by Leisure. The first two are intrinsic aspects of an occupation that might be perceived as important, particularly to many of the traditionally female occupations (nurse, teacher). For males the values of Variety and Independence accompany the value Helping Others, and perhaps all are seen as desirable characteristics of the helping professions. It should also be noted that the value Early Entry did not reach a factor loading of .3 in either sample. The most likely explanation for this is the high educational aspirations of the sample (whether realistic or not, and partly the results of being a New York City sample with the past traditions of open admissions at the City University and extensive community college system)--only 41 students (6.8%) thought they would Finish high school only, and another 5.3% thought they would attend Technical, Nursing, or

business school after high school. The remaining students aspire to complete at least a two-year college program.

Judging from the differences in the groupings of values on different factors for females and males, it appears that they perceive the world of occupational choice somewhat differently. This conclusion is reinforced by a factor analysis in which all three value sets--occupational, marriage, and parenthood--were included.

3. Exploratory factor analyses of the three value sets

The three sets of values concerned with different adult roles were factored separately for females and males. Fourteen factors had eigen values of 1.0 or more for each group. Part of the results for this analysis are given in Tables 3 and 4. Table 3 shows selected values with similar factor loadings in the female and male samples and Table 4 shows factors that appear differently for selected values for the female and male samples. These analyses were done using the standardized ratings, ratings transformed to a mean of 50 and SD of 10 within individual raters. The data reflect the more ipsative nature of the resulting scores, but nevertheless provide some provocative findings. (Again a criterion of .30 or higher was used to consider a loading meaningful on the factors.)

The most interesting finding is shown in Table 4, where two factors for the males show loadings only for occupational values. In contrast, the factors for females consistently showed a combination of values from at least two of the sets of values. Without attempting to interpret the findings further at this point, we can consider the implications for using values and interest measures and sex bias.

4. Implications for reducing sex bias

Other studies have found different results for females and males in factor analyses of interest measures (e.g., Tuck & Keeling, 1980, with high school students in Australia found different factor factors for females and males on Holland's Self Directed Search; and with college students, Lybarger, 1978). Mahoney et al. (1980), using small samples, found different factors for females and males on the Value Survey of Rokeach. Studies of other value sets with general populations tend to show sex differences in mean scores, but have not examined factor structures (e.g., Hales and Hartman, 1978; Wijting et al., 1977). However, recent studies of men and women employed in the same occupation tend to show they have similar work values (Kaufman and Fetters, 1980; Watson and Ryan, 1979). The results pose part of the dilemma in interest measurement: to what extent should we be concerned with different responses to or perceptions of activities/occupations for females and males at younger ages?

The factor analyses of the occupational values, and the three value sets suggest (as do many other studies) that high school boys and girls perceive their adult roles differently. Thus, the evidential basis of test interpretation, construct validity, may not be secure when boys and girls view the adult world differently. Fitzgerald and Crites (1980) also draw attention to the differing career psychology of men and women. The consequences of test use and interpretation under these circumstances are a continued bias against both sexes. Career choices for women tend to be limited by past experiences and expectations; and career choices are made by men with little or no consideration of their values related to other adult roles, e.g., in marriage and parenthood, and the satisfactions to be derived from them. Under these circumstances, we will continue to see occupational segregation and earning

differentials and the goals of sex equity are the reduction of these differences.

The implications for counseling are in two areas: (1) to actively encourage exploration of more careers and more nontraditional careers for women; but (2) these must be linked with an examination of options in the other two areas of marriage and parenthood--fertility, articulation of occupational and homemaking responsibilities, "negotiating" skills in the marriage relationship, reduction of sex-stereotyped views of all adult roles and so on (Tittle, 1981, p. 59). The role of values in counseling has been examined recently (Personnel and Guidance Journal, May 1980; Tyler, 1980), and several authors provide suggestions for practice. The three sets of values--occupational, marriage, and parenthood--can be used in conjunction with interest inventories to bring choices to the level of awareness and to facilitate exploration of the roles of worker, marriage partner, and parent. Particularly for women, the recognition of the relationship between self-identity and work in our culture is important, and for men the recognition of and planning for the satisfactions to be found in parenting. Test bias resides not only in individual items and scales used in the career area, but in the very conceptualizing of career decision making and vocational choices as isolated from other adult roles.

Table 1

Means of Ratings of Occupational, Marriage and Parenthood Values for Eleventh Grade Females and Males (Standard Scores)

Occupational Values	$F\bar{X}$	$M\bar{X}$	Marriage Values	$F\bar{X}$	$M\bar{X}$	Parenthood Values	$F\bar{X}$	$M\bar{X}$
High Income	49.1*	52.8*	Financial Security	48.2*	45.5*	Sense of Accomplishment	50.7	50.4
Prestige	49.0	49.7	Emotional Support	59.8*	58.4*	Sense of Pride	52.1	52.1
Independence	51.4	51.5	A Helpmate	48.0	47.6	Variety	51.7*	47.9*
Helping Others	55.8*	51.1*	Close Physical Relationship	56.0	55.8	Friendship	58.5*	56.3*
Security	54.5	55.3	Prestige	47.8*	44.3*	Respect of Others	39.6*	41.6*
Variety	51.4*	48.5*	Normal Life	39.3*	42.1*	Stable Marriage	44.5*	49.8*
Leadership	43.5*	47.5*	Permanent Companion	55.9	56.2	Chance to Express Love	61.0*	59.2*
Field of Interest	60.7*	59.0*	Children	52.5	53.3	Confidence as Man/Woman	43.4	42.5
Leisure	46.5*	48.2*	Your Own Home	47.1*	49.0*	Joy	60.2	59.2
Early Entry	37.2	36.4	Someone to Rely On	54.9	55.4	Future Security	45.1	45.6
			Feeling of Leadership	40.6*	42.3*	Tie to the Future	46.1*	47.0
						Sense of Importance	47.0	47.7

*p < .05
SDs range 6.4 - 12.5
N = 299F, 299M

Table 2

Occupational Value Ratings of Eleventh Grade Students:
Factor Loadings for 300 Females and 300 Males

Females								
Factor	1		2		3		4	
	High Income	.71	Leisure	.48	Helping Others	.44	Leader-ship	.62
	Security	.42	Variety	.42	Security	.46		
	Prestige	.41	Indepen-dence	.39	Work in Field of Interest	.30		
% Total Variance		21.1		13.3		10.9		10.2
% Factor Variance		52.3		20.8		14.5		12.4
Males								
Factor	1		2		3		4	
	High Income	.60	Leader-ship	.68	Helping Others	.43	Work in Field of In-terest	.31
	Leisure	.53	Prestige	.56	High Income	-.40	Prestige	.30
	Security	.47			Variety	.37		
					Independence	.30		
% Total Variance		19.9		14.2		11.3		10.5
% Factor Variance		48.6		25.8		15.3		10.3

Table 3

Selected Values with Similar Factor Loadings in Female, Male and Total Samples[3]

Female[1]			Male[1]			Total[1]		
Value Area[2]	Value	Loading	Value Area	Value	Loading	Value Area	Value	Loading
	(Factor 4)			(Factor 12)			(Factor 2)	
O	Prestige	.88	O	Prestige	-.60	O	Prestige	-.79
M	Prestige	.55	M	Prestige	-.80	M	Prestige	-.56
O	Variety	-.30	M	Children	.33	O	Variety	.44
	(Factor 5)			(Factor 5)			(Factor 7)	
P	A Sense of Accomplishment	-.74	P	A Sense of Accomplishment	.77	P	A Sense of Accomplishment	.76
P	A Sense of Pride	-.74	P	A Sense of Pride	.75	P	A Sense of Pride	.75
P	Variety	-.34	P	A Stable Marriage	-.34			
P	A Chance to Express Love	.41						
P	A Stable Marriage	.31						

[1] $N_F = 299$; $N_M = 299$; $N_T = 598$. [2] O = Occupational, M = Marriage, P = Parenthood

[3] Standardized Scores (within student)

Table 4

Sex Differences in Factor Loadings of Selected Values in Female, Male and Total Samples

Female			Male			Total		
Value Area	Value	Loading	Value Area	Value	Loading	Value Area	Value	Loading
	(Factor 3)			(Factor 4)			(Factor 3)	
O	High Income	-.74	O	High Income	.78	O	High Income	-.71
O	Helping Others	.31	O	Helping Others	-.76	O	Helping Others	.71
O	Variety	.33				O	Security	-.33
M	Financial Security	-.72						
M	Children	.38						
M	Permanent Companion	.35						
	(Factor 12)			(Factor 8)			(Factor 12)	
O	Leisure	-.71	O	Independence	.70	O	Independence	.87
P	A Sense of Importance	.54	O	Leisure	-.70	O	Leisure	-.31
O	Helping Others	.38						
O	Field of Interest	.34						
	(Factor 13)						(Factor 8)	
O	Independence	-.74				O	Leisure	-.52
O	Helping Others	.45					A Close Physical	
M	Prestige	-.45				M	Relationship	.52
M	Children	.33					A Sense of	
						P	Importance	.67
						P	Variety	-.36